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Overcoming math anxiety is part of the equation

Middle school girls helped by IWU students gain confidence as they conduct their own research.

Story by REBECCA WELZENBACH '07

To many, the following description of a statistical analysis might sound dry: “Because both of our variables were continuous, we did a correlation test on our data, and we found that there was not a significant relationship between the amount of peer pressure and the amount of bullying experienced.” However, researcher Jessica Gardner’s ability to perform a correlation test, as well as her confidence in explaining her use of the procedure, is anything but boring.

Gardner is not a sociologist or a psychologist. In fact, she is not even in high school. An eighth-grader at Chiddix Junior High School in Normal, Gardner was one of 11 girls to take part in Illinois Wesleyan’s first session of GO-GIRL (Gaining Options: Girls Investigate Real Life), an after-school mentoring program. Coordinated by Associate Professor of Psychology Kira Hudson Banks and staffed by nine student mentors, all Illinois Wesleyan women majoring in psychology, the program encourages adolescent girls like Gardner to achieve their full academic potential in mathematics. By the end of the 10-week program, students who may have been intimidated by mathematics and science are adeptly using statistics and research skills to answer questions about the issues they face each day at home and at school.



Above left, Apree'ce Bonds gets some PowerPoint pointers from Becky Skupien '06. Bonds was among 11 junior high girls who enrolled in the GO-GIRL program this past spring, led by Professor Kira Hudson Banks. (Photo by Marc Featherly)

According to Banks, at the junior high level boys and girls are equally capable of learning and performing math and science skills. However, at this stage, girls’ “attitudes and confidence start to change.” Part of the problem, Banks says, is that girls commonly see advanced math and science skills as irrelevant to everyday problem solving. The GO-GIRL program encourages girls to achieve their full academic potential in mathematics by demonstrating how useful and empowering math knowledge can be.

Funded by a National Science Foundation grant, GO-GIRL originated at the University of Michigan in 2000 and has grown to six programs nationwide. For the Bloomington pilot program, 11 junior high girls met with mentors and supervisors twice weekly for after-school tutoring sessions at the local branch of the McLean County Urban League, Illinois Wesleyan’s community partner on the project. The curriculum began with a review of fractions and decimals, but quickly moved ahead to complex statistical data analysis, including skills many of the mentors had

encountered for the first time at the college level.

Applying the techniques they had mastered, the middle school students worked in groups to complete a final project in which they analyzed data collected and posted at www.smartgirl.org. Supported by the University of Michigan, the site features series of questions created and posted by previous GO-GIRL participants. Visitors to the site can respond to the surveys — which address issues such as stress, peer pressure and popularity — and the results are tallied for further study. Gardner and her partners, Tyanna Johnson and Adrienne Marshall, chose to examine responses to a survey about bullying in order to answer questions such as “Who bullies more, boys or girls?” and “What is the relationship between peer pressure, and bullying?”

The trio, who dubbed themselves “The Diamonds,” also used critical-thinking skills to explain the answers they found. For example, although they had hypothesized that girls would bully more than boys, the survey results indicated the opposite. Not discouraged, they proposed that their definition of bullying might differ from that of the survey respondents. As a result, they learned the importance of precisely defining terms used in a study to avoid miscommunication.

Banks, who joined Illinois Wesleyan’s faculty in 2004, believes that GO-GIRL’s emphasis on social science application — using math skills to interpret survey results, rather than to just complete worksheets — is an innovative way to conquer the “I’ll never need to know this” mentality about math and science that for many women begins in middle school.

Another key to the program’s success, Banks says, is students’ interaction with their mentors, who serve as positive role models — and, often, friends. Recalls mentor Kavita Shah ’06, “There were many times when the girls came in upset or frustrated and I think they really liked being able to talk to their mentors.”

Having recently gone through similar growing pains also helped mentors relate to their students. “Adolescents need someone they can turn to,” says Heather Kwoka ’06, “someone who will listen to what they have to say.”

In fact, the program’s rewards worked both ways. Over the course of the spring, the IWU students, many of them headed for careers in education or psychology, earned credit in the classroom for a 300-level psychology course on the social and academic development of girls in middle school. But beyond academics, many mentors report that the experience was emotionally gratifying.

“When one of my mentees told me that she felt the program was helping her do better in her math class, I felt like everything we had been working on was truly paying off,” recalls Rebecca Skupien ’06.

Both Illinois Wesleyan and the Urban League are anxious for the program to continue, although some details of funding and scheduling remain unsettled. But the evidence of GO-GIRL’s lasting worth was clearly displayed April 13, when the teams of students — surrounded by their parents, friends, and mentors — presented their final research with slide shows that they designed themselves in Microsoft PowerPoint.

Sitting in the front row while waiting for students to begin their presentations, Jennifer Taylor said she’d seen what a difference the program had made to her daughter, Jasmin. A seventh grader at Kingsley Junior High School in Normal, Jasmin is an avid reader who had not shown much interest in math in the past. Taylor said she was particularly impressed to see her daughter working with ease in PowerPoint and speaking enthusiastically about what she learned each week.

Skupien says that her mentee’s mother also noticed significant progress in her daughter’s academic development. “On the last day of class, Ivory’s mom looked so proud, telling me that because of her involvement in the GO-GIRL program, Ivory had made the honor roll the last quarter.” Her mentee, Ivory Vaughn, was a seventh grader at Kingsley Junior High School in Normal.

As Jessica Gardner gave her final presentation, “I was so proud of her progress that I got emotional,” recalls her mentor, Melissa Serritella ’07. As the girls analyzed, correlated, and hypothesized, the look of excitement and confidence on their faces showed that Serritella’s pride was well justified.



Banks (above) gave GO-GIRL t-shirts to students who graduated from the program. During the ceremony, students presented their research results to their family, friends, and mentors. (Photo by Marc Featherly)